Chapter XIII
Telematic Environments and Competition-Based Methodologies:
An Approach to Active Learning

Elena Verdú
University of Valladolid, Spain

Luisa M. Regueras
University of Valladolid, Spain

María J. Verdú
University of Valladolid, Spain

Juan Pablo de Castro
University of Valladolid, Spain

María A. Pérez
University of Valladolid, Spain

ABSTRACT

This chapter provides an overview of technology-based competitive active learning. It discusses competitive and collaborative learning and analyzes how adequate the different strategies are for different individual learning styles. First of all, some classifications of learning styles are reviewed. Then, the chapter discusses competitive and collaborative strategies as active learning methodologies and analyzes their effects on students’ outcomes and feelings, according to their learning styles. Next, it shows how networking technology can mitigate the possible negative aspects. All the discussion is supported by significant study cases from the literature. Finally, an innovative system for active competitive and collaborative learning is presented as an example of a telematic versatile learning system.
**INTRODUCTION**

New active learning methodologies are arising as more effective learning methods than the traditional ones. The effectiveness of a learning process is achieved when its results are lasting and transferable to other situations. Various studies have shown an important improvement in long term retention of what is learnt when active learning techniques are introduced into the learning process (Canós & Mauri, 2005; Timmerman & Lingard, 2003). For example, Hyland (2002) shows that people are able to remember about 20% of what they listen to (*passive*), 70% of what they say (*active*), and 90% of what they say and do (*active*).

The use of active methodologies contributes to develop in students the capacity to actively research and undertake prominent roles and leadership in their own learning process, facing the resolution of problems with their own resources.

Active learning is not a new concept, although the interest in applying it has increased a lot over the last few years. This increase has become more noticeable with the spread of information and communication technology (ICT).

ICT opens up numerous possibilities with regard to the implementation of active methodologies. It permits the development of remote cooperative activities, where the teacher’s role can be easily adapted to the model in which students must actively lead their learning process (Bryndum & Montes, 2005).

When applying ICT-based active learning methods, the teacher should understand the educative value of the telematic tools and know how to use the technology in order to improve the learning process. In this sense, it is commonly believed that technology is effective when it comes accompanied by a constructivist pedagogy, which supports the learning based on investigation. Wirsig (2002) agrees about it and, moreover, she states that technology can add a considerable cognitive value to the learning process.

It also has to be taken into account that the implementation of an education model based on active methodologies is not an easy task, as a number of difficulties usually arise. Some of these difficulties are: the rejection of new methods by both students and teachers; the number of students in each class; and even current classroom set-up, which appears more suited to taking notes rather than doing group work (Verdú, Regueras, Verdú, Pérez, & de Castro, 2006a).

On the other hand, the results obtained when applying active learning techniques have not always been positive. These techniques are more effective in order to achieve some objectives, whereas traditional classes are better for some others (McCarthy & Anderson, 2000). Besides, students have different learning styles and, consequently, not every student benefits the same from active learning. For example, Zywno and Waalen (2002) compare the effect of individual learning styles on student outcomes in conventional environments with the same in hypermedia assisted environments. When applying hypermedia systems, they find better results with students who prefer active, sensing, and global learning. In any case, they state that, due to the multimodal attributes involved, hypermedia is more effective in reaching all types of students and reducing differences in the academic performance among several learning styles.

Therefore, we can assert that the selection of a learning-teaching strategy entails previously not only determining the cognitive activity of the learning, that is, the type of skills, competencies, and techniques to be developed (Fandos & González, 2005), but also takes into account the individual learning styles of students. The strategy implemented in a certain learning process may not be the right one for every student.

One of the key aspects for the success of a learning methodology is motivation. The recommendations about learning strategies normally include techniques to encourage students. Nowadays we have more resources than ever to design...